

PATENT COOPERATION TREATY
INTERNATIONAL PRELIMINARY EXAMINATION REPORT

IDENTIFICATION OF THE INTERNATIONAL APPLICATION		Applicant's or Agent's File Reference 31 402																						
International Application No. PCT/EP91/02057	International Filing Date 30.10.91																							
Receiving Office RO/EP	Priority Date Claimed 05.11.90																							
Applicant (Name) NUKEM GMBH, et al.																								
BASIS OF REPORT																								
<p>1. AMENDMENTS AND/OR RECTIFICATIONS¹ — The amendments and/or rectifications made before this International Preliminary Examining Authority in respect of the claims, the description, and/or drawings in the above-identified international application are annexed to this report.</p> <p>a. <input checked="" type="checkbox"/> This report has been established on the basis of the following application documents:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;"><input type="checkbox"/> the application documents as filed</td> <td></td> </tr> <tr> <td><input checked="" type="checkbox"/> description, pages 2, 3, 4, 7-14</td> <td>as originally filed</td> </tr> <tr> <td><input type="checkbox"/> description, pages 1, 5, 5a, 6</td> <td>filed with your letter of 21.10.92</td> </tr> <tr> <td><input type="checkbox"/> description, pages</td> <td>filed with your letter of</td> </tr> <tr> <td><input type="checkbox"/> description, pages</td> <td>filed with your letter of</td> </tr> <tr> <td><input checked="" type="checkbox"/> claim(s)</td> <td>as originally filed</td> </tr> <tr> <td><input type="checkbox"/> claim(s) 1-7</td> <td>filed with your letter of 21.10.92</td> </tr> <tr> <td><input type="checkbox"/> claim(s)</td> <td>filed with your letter of</td> </tr> <tr> <td><input type="checkbox"/> claim(s)</td> <td>filed with your letter of</td> </tr> <tr> <td><input type="checkbox"/> drawings, sheet/fig.</td> <td>as originally filed</td> </tr> <tr> <td><input type="checkbox"/> drawings, sheet/fig.</td> <td>filed with your letter of</td> </tr> </table> <p>b. <input type="checkbox"/> The amendments resulted in the cancellation of the following sheets:</p> <p>c. <input type="checkbox"/> This report has been established as if the amendments indicated on the extra sheet have not been made, since, for the reasons indicated, they have been considered to go beyond the disclosure as filed.</p>			<input type="checkbox"/> the application documents as filed		<input checked="" type="checkbox"/> description, pages 2, 3, 4, 7-14	as originally filed	<input type="checkbox"/> description, pages 1, 5, 5a, 6	filed with your letter of 21.10.92	<input type="checkbox"/> description, pages	filed with your letter of	<input type="checkbox"/> description, pages	filed with your letter of	<input checked="" type="checkbox"/> claim(s)	as originally filed	<input type="checkbox"/> claim(s) 1-7	filed with your letter of 21.10.92	<input type="checkbox"/> claim(s)	filed with your letter of	<input type="checkbox"/> claim(s)	filed with your letter of	<input type="checkbox"/> drawings, sheet/fig.	as originally filed	<input type="checkbox"/> drawings, sheet/fig.	filed with your letter of
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<input type="checkbox"/> drawings, sheet/fig.	filed with your letter of																							
<p>2. PRIORITY²</p> <p>a. <input type="checkbox"/> This report has been established as if no priority has been claimed due to the failure to furnish within the prescribed time limit the requested:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;"><input type="checkbox"/> copy of the earlier application whose priority has been claimed.</td> <td></td> </tr> <tr> <td><input type="checkbox"/> translation of the earlier application whose priority has been claimed.</td> <td></td> </tr> </table> <p>b. <input type="checkbox"/> This report has been established as if no priority has been claimed due to the fact that the priority claim has been found invalid.</p> <p>Thus, for the purposes of this report, the international filing date indicated above is considered to be the relevant date.</p>			<input type="checkbox"/> copy of the earlier application whose priority has been claimed.		<input type="checkbox"/> translation of the earlier application whose priority has been claimed.																			
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<small>* Where replacement sheets are annexed to this report, a translation of these replacement sheets must be furnished to the elected Offices within the time limit applicable under PCT Article 39(1).</small>																								

BASIS OF REPORT (Continued)

3. UNITY OF INVENTION³ — The international application does not comply with the requirement of unity of invention.

a. In response to an invitation to restrict or pay additional fees the applicant has:

restricted the claims.
 paid additional fees.
 paid additional fees under protest. Where requested by the applicant, the text of the protest together with the decision taken thereon are annexed to this report.
 neither restricted nor paid additional fees.

b. No invitation has been issued. The opinion of this International Preliminary Examining Authority is that the international application does not comply with the requirement of unity of invention for the following reasons. (specify)

c. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

all parts.
 the parts relating to the restricted claims, that is claims Nos. _____.
 the parts relating to the main invention, that is claims Nos. _____.

4. NON-ESTABLISHMENT OF REPORT ON QUESTIONS OF NOVELTY, INVENTIVE STEP OR INDUSTRIAL APPLICABILITY⁴

The questions of whether the claimed invention appears to be novel, to involve an inventive step or to be industrially applicable have not for the reasons indicated been gone into in respect of:

a. the entire international application

b. claims Nos. _____

for the following reasons:

Said international application, or said claims Nos. _____ relate to the following subject matter which does not require an international preliminary examination. (specify)

The description, claims, or drawings (indicate particular elements) or said claims Nos. _____ are so unclear that no meaningful opinion could be formed.

The claims, or said claims Nos. _____ are so inadequately supported by the description that no meaningful opinion could be formed.

Said claims Nos. _____ are dependent claims and are not drafted in accordance with the second and third sentences of PCT Rule 6.4(a).

CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all.)⁵

According to International Patent Classification (IPC) or to both National Classification and IPC

B01J; C01B; C01F**REASONED STATEMENT AS TO CLAIMS MEETING CRITERIA OF NOVELTY (N), INVENTIVE STEP (IS)
AND INDUSTRIAL APPLICABILITY (IA)⁶ AND CITATIONS⁷ AND EXPLANATIONS⁸
SUPPORTING SUCH STATEMENT**

CLAIM NUMBER	STATEMENT (CRITERIA)	CITATIONS AND EXPLANATIONS
1	N: Yes IS: No	
2	N: Yes IS: Yes	
3, 5, 7	N: No	See the Accompanying sheet.
4, 6	N: Yes	
1-7	IA: Yes	

NON-WRITTEN DISCLOSURES ⁹			
Kind of Non-Written Disclosure	Date of Written Disclosure referring to the Non-Written Disclosure	Date of Non-Written Disclosure	
CERTAIN PUBLISHED DOCUMENTS ¹⁰			
Application/Patent	Date of Publication	Filing Date	Priority Date (Valid Claim)
CERTAIN DEFECTS IN THE INTERNATIONAL APPLICATION ¹¹			
The following defects in the form or contents of the international application have been noted.			
CERTAIN OBSERVATIONS ON THE INTERNATIONAL APPLICATION ¹²			
The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description have been noted.			
CERTIFICATION			
Date Demand Submitted	Date of Completion of the International Preliminary Examination Report		
17.04.92	07.12.92		
International Preliminary Examining Authority	Signature of Authorized Officer		
IPEA/EP			

The subject matter of claim 1 is novel, because none of the international search report citations discloses all the features of claim 1.

US-A-4 198 318 (D1) is considered to be the closest state of the art.

The subject matter of claim 1 differs from D1 by its characterizing portion. But this characterizing portion does not involve an inventive step. It is known from FR-A-2 387 076 (D2) to manufacture beadlike particles by producing droplets using a vibrating (frequency 600 Hz) plate having several openings or nozzles, pre-solidifying the droplets separately by blowing ammonia gas onto them laterally and collecting the pre-solidified droplets in an ammonia solution. It was obvious to the person skilled in the art to use the measures known from D2 in D1 to obtain the desired aluminium oxide shaped bodies.

The measures of the dependent claims 3-7 cannot contribute to a patentable independent claim 1, because they are already known, see D2, page 4, line 13 et seq. with the present claim 3, and D1, column 3, lines 26-29 with the present claims 5 and 7, or fall under the routine work of those skilled in the art, see present claims 4 and 6.

The independent claim 2 differs from claim 1 by the use of a nozzle plate comprising several nozzles disposed on a ring. This arrangement makes it possible to pre-solidify the droplets dropped from the nozzle ring from inside the ring and, from the outside, by blowing ammonia gas onto them. The droplets

thereby become sufficiently solid to withstand flattening before entering the ammonia solution and aluminium oxide shaped bodies of optimal sphericity are obtained.

The teaching of claim 2 is neither anticipated by the documents D1 and D2 nor suggested by their combination.

The aluminium oxide beads produced by the process as per the application can be used as adsorbents in chromatography or as catalysts or catalyst supports.